Administering the NPDES Industrial Storm Water Program at the Municipal Level

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Abstract

As part of the EPA Phase 1 stormwater requirements, certain classes of industries are required to obtain Industrial Storm Water permits. The EPA, or a state agency that has been delegated by EPA, administers these permits. The Phase 1 regulations also require that municipalities develop a program to monitor and control pollutants in storm water runoff from industrial facilities. These are potentially non-coordinated requirements and can result in redundant efforts and a less than efficient program. In addition, EPA and/or state agencies may not have the resources to adequately administrate and enforce the permitting program while leaving the municipality liable for the discharges from the municipal separated storm sewer system (MS4).

The City of Portland, Oregon (City), met the requirement in its municipal storm water permit to control industrial stormwater sources of pollution by developing a Memorandum of Agreement (MOA) with the Oregon Department of Environmental Quality (DEQ), (which is the delegated authority) to administer the permit program. The MOA provided the City with the mechanism to administer the industrial stormwater permits for those facilities that discharge to the City's MS4. The City pursued this approach since it was responsible for the discharge from the MS4 and wanted to ensure that it had adequate oversight of these discharges. By coordinating this effort with other ongoing industrial water quality programs, the City could provide a more cost-effective program, considering the regulatory costs as well as cost to the industry. City Code was developed to support this approach.

When the City took over the administration of the permits in 1994, over 50% of the facilities with a permit had not met the requirements for the development of a storm water pollution control plan, the main requirement of the permit. In addition, nearly 60% of the permitted facilities had not performed the required stormwater sampling. Of the samples taken, approximately 30% violated standards in the permit. It was also evident that not all facilities required to obtain a permit had done so. Efforts since 1994, have shown that only 25–30% of the facilities required to obtain a permit had applied. A benefit of the local administration of the program is the detection of illicit discharges to the MS4. Approximately 15% of all industrial inspections have identified illicit discharges.

The City has also identified certain classes of industries and activities that can be significant sources of pollutants to the MS4. This has helped streamline the program efforts and redirect resources to where the greatest cost benefit will be realized.

Introduction

Stormwater discharges have been increasingly identified as a significant source of water pollution in numerous nationwide studies on water quality. To address this problem, the Clean Water Act Amendments of 1987 required EPA to publish regulations to control storm water discharges under NPDES. EPA published storm water regulations (55 FR 47990) on November 16, 1990 which require certain dischargers of storm water to waters of the United States to apply for NPDES permits. These regulations established NPDES permit application requirements for storm water discharges

associated with large- and medium-size MS4s. The regulations also established NPDES permit application requirements for storm water discharges associated with industrial activity. EPA has defined this phrase in terms of 11 categories of industrial activity.

A requirement of the City's application process was "A description of a program to monitor and control pollutants in storm water discharges to municipal systems from municipal landfills, hazardous waste treatment, disposal, and recovery facilities, industrial facilities that are subject to Section 313 of Title III of the Super-fund Amendments and Reauthorization Act of 1986 (SARA), and industrial facilities that the municipal permit applicant determines are contributing a substantial pollutant loading to the municipal storm sewer system." (40 CFR 122.26(d)(2)(iv)(C). This creates the potential for redundant efforts and a less than efficient program.

The stormwater regulations envision that NPDES permitting authorities and municipal operators will cooperate to develop programs to monitor and control pollutants in storm water discharges to MS4 from certain industrial facilities. The NPDES permits for industrial facilities establish requirements such as controls, practices, and monitoring of stormwater discharges, as well as provide a basis for enforcement actions. An integral part of the requirement is the adequacy of legal authority. This will allow the municipality to implement its program, which should include inspections, review of stormwater pollution control plans, monitoring, and implementation of control measures.

The municipality is ultimately responsible for discharges from its MS4. To meet the requirement in its municipal stormwater permit, and to provide the oversight necessary to protect itself from liability, the City developed new legal authority and entered into an MOA with the authorized NPDES state authority (DEQ), to administer the permits for those discharges to the MS4.

Program Elements

Legal Authority

The City did not have adequate legal authority to oversee discharges to the MS4. In response to this, the City developed code in February 1994. Some of the major provisions of the code are:

- Authority of the Director of Environmental Services to Adopt Rules
- General Discharge Prohibitions
- Discharge Limitations
- Reporting Requirements
- Storm Water Pollution Control Plan (SWPCP)
- Storm Water Discharge Permits
- Inspection and Sampling
- Enforcement

Key elements of the code include the requirement for permit holders to submit their SWPCP and monitoring results to the City, the authority for the Director to adopt administrative rules, make inspections, and undertake enforcements.

Memorandum of Agreement

The City entered into a MOA with the DEQ in March 1994. The MOA delineates the responsibilities for the implementation of the program between the two agencies. The MOA also prioritizes the implementation of the program to address those facilities that are of most concern first. Key elements of the City's responsibilities include:

- Development of an inspection and monitoring program
- Informing DEQ of any new or existing facilities that require a permit
- Enforcement of City Code

Key elements of DEQ's responsibilities include:

- Issuance of NPDES Industrial Storm Water permits upon referral or approval by the City
- Denial of permit applications for process wastewater discharge into the MS4
- Enforcement where the City lacks authority

Inspections and Monitoring

The section responsible for the implementation of the program is an autonomous work group. It is housed in the Source Control Division, which includes the pretreatment program. In November 1994, two inspectors were hired to implement the program under an existing supervisor. DEQ, which had been issuing permits since September 1992, provided a list of facilities with stormwater permits. A letter was sent to the permit holders requesting that they submit their SWPCP and all monitoring results. The letter referenced the MOA and included code citing the City's authority. Inspections were prioritized based on problematic outfalls as determined from information gathered in the Part 1 and 2 application process.

Inspections are usually scheduled in advance with the facility operator but can be performed without notice. Inspection forms are filled out during the inspection and any readily noticeable issues addressed during a post inspection meeting. Technical assistance is provided and information on Best Management Practices given in the form of verbal suggestions and reprints. Facilities are also evaluated for the presence of illicit discharges. All inspections are followed up with correspondence outlining the findings of the inspection and expectations of the industry. Any item where the industry is not in compliance with the permit is highlighted with a deadline to meet compliance before escalating enforcement is pursued. It is the goal of the program to perform annual inspections, at a minimum, of all permitted facilities.

Industries are also inspected if they are identified as potentially needing a permit. These facilities are identified through a systematic search using storm water outfall basins prioritized based on problematic outfalls. The basins are delineated for drainage, the industrial facilities identified within the basin using our database, and facilities selected by SIC Code. Inspections are also performed in response to referrals, drive-bys, complaints, and responses to an industrial survey performed in support of the pretreatment program. Prior to an inspection, building records, existing files from the pretreatment program, and plumbing records are reviewed.

Stormwater sampling of permitted facilities is performed by collecting grab samples at the sample point(s) identified in the facility's SWPCP. Analyses are performed by the City lab. This sampling does not relieve the facility of its stormwater sampling responsibilities. Files are developed on the facilities and maintained separately from the pretreatment files. An electronic database has been developed and is used by both pretreatment and storm water staff.

Enforcement

Enforcement capability was developed in City Code. Where the City does not have enforcement authority, it seeks voluntary compliance and refers enforcement to the permitting authority when necessary.

Funding

The program is entirely funded through a surcharge on the storm water fee for industrial and commercial accounts. The storm water fee is currently based on impervious area. This surcharge also funds portions of other programs that

have work related activities because of industrial and commercial storm water discharges. The current staffing level is one supervisor and three technicians. Program costs amount to approximately $280,000 per year. This is primarily composed of salaries and benefits, but also includes approximately $25,000 for sample analyses The budget also contains funds for the development of BMPs and educational materials.

Findings

Legal Authority

It is essential that legal authority be developed in order to be able to implement and support a municipal program. However, what is contained in the enabling legal authority (code) can vary drastically. It is important that the municipal permit holder review the NPDES Industrial Storm Water permit to determine its adequacy in meeting the municipal permit requirements. Most industrial storm water permits are general permits and they may not adequately address issues for which the municipal permit holder is responsible.

For instance, if the municipality is responsible for meeting TMDLs for a particular water body, the industrial permit may not even require that the facility monitor for these pollutants in its discharge. Provisions should be placed in code that allow the municipality to require the facility to conduct this monitoring. Another example would be the requirement to submit SWPCP and monitoring results to the municipality if this is not included in the permit. Nothing in federal regulations prohibits the municipality from requiring additional controls beyond the permit requirements. A review of the industrial stormwater permits can help identify elements that should be included.

Another provision that should be considered is the ability of the municipality to require a facility to obtain a permit. Currently, federal regulations base the requirement for a permit on SIC Code and exposure. There is a caveat that allows the permitting authority to require a facility to obtain a permit regardless of its SIC Code if that facility is impacting water quality. However, this could require that the municipality undertake sampling and additional work to prove an impact. This reduces the efficiency of the program in terms of resources and uniformity. It may even be necessary to include provisions in the code that allow the municipality to develop its own permit. Such a tactic is time consuming, however, and could create confusion for the regulated community.

Memorandum of Agreement (MOA)

The MOA should be developed to clearly outline the responsibilities between the permitting authority and the municipality. Language should be broad enough not to constrict how the municipality implements the inspection and monitoring program. This allows the municipality to alter the program as information is obtained from inspections without having to alter the MOA. Probably the most important element of the MOA is the delineation of enforcement. Since the municipality does not have authority to enforce permit conditions, language should specify that the municipality will enforce applicable requirements of the Code and seekvoluntary compliance where it has no independent enforcement authority. If compliance is not obtained using these methods, enforcement would be referred to the permitting authority.

Inspections

The City has placed the responsibilities for implementation of the program within the Industrial Source Control Division. The section also houses the pretreatment program. It was felt that the responsibilities needed to be separate because of the large number of facilities that are to be addressed. The City has over 24,000 commercial and industrial facilities. Of these, nearly 3,000 have the SIC Code that potentially places them in the permitting program. In addition, a Stormwater Work Group is responsible for addressing other discharges to the MS4, such as pumped groundwater, boiler blow-down, water supply line flushing, washwater, and others.

For the City's situation, this arrangement has worked very well. The Work Group is able to develop expertise in the area while having access to existing information from the pretreatment program. Other municipalities have adopted this approach while others have incorporated the responsibility into the pretreatment program or other existing programs

including fire and safety inspections. The municipality needs to consider several items when determining who will be responsible for implementing the program.

. The number and type of industries

- Existing oversight of the industries (pretreatment, hazardous materials,. . .)
- Existing programs within the municipality

If the municipality decides to place the responsibility in a Work Group that is not dedicated for this purpose, it needs to ensure that adequate resources exist to implement the program and meet the conditions of the MOA. The stormwater program may not be the priority of the assigned work section and if resources become inadequate, this work may be viewed as low priority and may not be addressed at the level that makes it effective.

The City has developed several "partnerships" to expand the inspection program. Informational flyers and a poster were developed for county sanitarians to use when they inspect restaurants. A simple storm water checklist was developed for City commercial recycling staff to use when inspecting retail establishments. In both of these cases, it is important to note that the facilities targeted would not ordinarily be inspected for storm water issues (unless a complaint was received) and that any issues of consequence would be addressed by storm water staff.

Permits

The DEQ has been issuing permits since September 1991. When the City took over administration of the permits in the fall of 1994, 63 facilities that discharged to the MS4 had permits. Since that time, an additional 65 facilities have been identified through inspections of non-permitted facilities. Non-permitted facilities are inspected based on SIC Code and prioritized by outfall basins that have been identified as problematic. This approach was necessary due to the large number of industries within the City that have the SIC Code included in the federal regulations. To perform a general survey of all facilities would have generated much more work than resources allowed. Each site would have to be evaluated prior to the issuance of a permit as the City is a mixture of combined sewers, sumps, and separated storm sewers. Staff members spend a considerable amount of time determining where stormwater drainage discharges. A municipality may be able to utilize this approach if the industrial base is smaller. Federal guidance states that a system-wide approach to establishing priorities for inspections should be developed.

Based on inspections of non-permitted industries to date (approximately 15% require a permit), and the remaining facilities that require inspections, it is estimated that an additional 50-100 facilities will be permitted. Based on these numbers, only 25-30% of facilities requiring a permit had applied when the City took over administration of the program. However, a large percentage of the facilities not requiring permits still had issues that needed to be addressed or were given BMPs that they were requested to implement.

SWPCP

The original general permit developed by DEQ did not require that the permit holder submit the SWPCP. When the City took over administration of the permits, the plans were to be submitted using provisions of the City Code. Over 50% of the facilities (33 of 63) had not developed a plan within the 180 days allowed in the permit, and of these, 14 (22%) had not even developed a plan. It is imperative that the municipality includes provisions in the code to obtain these plans if the provision does not exist in the permit. The requirement to submit the plan allows the City to track its development and review the plan prior to an inspection. Currently, only 5% of facilities have not met the requirement to develop the plan in the required time period.

Unfortunately, there is no requirement in the permit that the plans need to be approved. As long as they contain the necessary elements required in the permit they would be in compliance. This has proven problematic in the quality of some plans. It also restricts the City's ability to require that the facility implement certain pollution control activities. This emphasizes the need to include these provisions in the legal authority. The City has taken the approach of strongly

suggesting that certain activities be implemented and incorporated into the plan. Once it is in the plan, it becomes part of the permit and provides a mechanism to require the facility to implement these measures. The City is then able to take the position of providing assistance in evaluating compliance with the permit. By noting these deficiencies and seeking voluntary compliance, the City believes it is assisting the industry in meeting the conditions of their permit and benefiting the environment through the implementation of the SWPCP.

Monitoring

When the City took over administration of the program in 1994, monitoring results were requested from permitted facilities. Nearly 60% (36) of the facilities had not performed the required monitoring for the previous year. Of these, 22 had not taken the required two samples, while the remaining 14 did not perform the complete analyses. Of the samples taken, 30% violated standards in the permit. Within the first year, the City was able to raise compliance on sample collection to over 80% and reduce violations of standards from 30% to 23%. Currently, over 90% of the facilities are in compliance with sample collection. It is more difficult to compare compliance with standards because a new permit was issued in 1998, that includes benchmarks for metals that were not in the original permit.

Monitoring results have limitations because they are grab samples taken from a discharge that is short-term in nature and highly variable. However, they can be used as a tool to measure effectiveness of BMPs and to identify sources of pollutants. Based on sample results, the City has identified several classes of industries that pose significant pollution concerns. These are, in order:

- Automotive recyclers (SIC Code 5015) – metals, oil and grease;
- Recycling industry (5093) - metals, oil and grease;
- Transportation facilities (various 4000) – metals, oil and grease, TSS;
- Heavy manufacturing (33--, 34--) – metals;
- Food industry (20--) – TSS, BOD, oil and grease.

Other SIC Code groups either represent a lower threat as a whole or are not present in the MS4. The City is now using this information to reprioritize their efforts in identifying industries that require a permit. While the City is still pursuing efforts based on outfalls, they are also developing a parallel effort to inspect all the facilities in these classes. In addition, investigation efforts by the City identified the Wholesale Distribution of Construction Equipment (5082) and Heavy Construction Equipment Rental (7353) as significant sources of pollutants. These classes are not included in the federal regulations, but any municipal program should evaluate these facilities.

Enforcement

Enforcement capabilities have been developed in code for those discharges to the MS4. However, the City does not have enforcement capability on permit provisions. The City must seek voluntary compliance and refer those matters to the permitting authority for which they don't have enforcement capability. This has worked to date, but requires coordination between the City and DEQ. When seeking voluntary compliance, the City uses the threat of referral to the permitting authority or third party lawsuits to obtain compliance. To make this effective, the permitting authority must be ready to follow up with enforcement upon the municipality referral.

Funding

As with a number of environmental programs, especially regarding storm water, it is very difficult to measure the cost/benefit until the program has been in place for a period of time. Costs have been identified, and certain benefits have been realized. Compliance with permit conditions, for both industry and the City, have been, for the most part, met. However, has this resulted in a benefit to the environment? City data have shown that industrial land use areas have

significantly higher concentrations of pollutants than other land uses. Whereas the industrial land area in the MS4 is only 4%, it accounts for 11% of TSS, 15% of oil and grease, and 24% of metals. It would reason that a program aimed at the highest concentration of pollutants would produce a good return on the investment, Another benefit of the program has been the identification and removal of non-stormwater discharges. Approximately 15% of the inspections have identified non-stormwater discharges, primarily washwater, that were of concern.

Conclusions

The development of a program to monitor and control pollutants from industrial facilities is not one of the six BMPs that Phase II permit holders will be required to be developed. This may be due, in part, to the assumption that all industrial permits would be in place because of Phase I requirements. However, our efforts have shown that only 25-30% of the industries requiring permits had applied prior to the administration of the program by the City.

If a municipality decides to develop and implement a program, it is recommended that it utilizes the accomplishments of Phase 1 applicants. Phase 1 applicants can provide inspection forms, BMPs, MOAs, code language, and other necessary components to develop the program. They can also share results of their work to help prioritize the efforts of the municipality and help decide how to incorporate the work into existing programs. A municipality may also become a co-applicant with Phase 1 permit holders. If this occurs, the applicant will become subject to an industrial control program but may be able to utilize the existing program of the permit holder.

If a municipality does not develop a program, it is recommended that it at least work with the permitting authority to identify who has a permit and the status of their compliance. The municipality should also evaluate the industrial base in the MS4 and provide this information to the permitting authority if it identifies a facility that may be subject to the program. It may be prudent to incorporate these activities into the illicit discharge elimination program, which is a requirement of the permit. Whatever the municipality chooses, it needs to understand that it is ultimately responsible for discharges from its MS4.